


The development of the coal
industry in Alberta.



Digitized by the Internet Archive
in 2018 with funding from
University of Alberta Libraries

University of Alberta,
March 12, 1927.

Dr. Mac Gibbon,
re. Research Essay.

Dear Sir:

Please note the following
number which will be attached
to each page of my essay

70-30

Yours truly,
C. E. White

Alberta"

1st pring

1926-27
The Gateway
Coal Research
Competition

UNIVERSITY OF ALBERTA
ARCHIVES

ACCESSION NO. 70-79-4

REFERENCE NO.

Dr. Mae Wilson

Receipts

341267

5

--University of Alberta--
.....

--Research Essay--

"The Development of the Coal Industry in Alberta"

Name..Ja.....

Date..March.15.1927

*a printed
Rather interesting in places.*

UNIVERSITY OF ALBERTA
ARCHIVES

ACCESSION NO. 70-79-4

REFERENCE NO.

The Development of the Coal Industry in Alberta.

Alberta is today confronted with the largest problem she has ever encountered. A problem which has been growing continually since 1873 and which has now taken on such immense proportions that it can no longer be disregarded. This question has been brought to the foreground during late years and has received considerable study from different angles. These studies, while doing a certain amount of good, have on the whole been influenced by prejudices due to political, provincial or financial reasons, and a thorough study of the situation has not been made from an unbiased viewpoint. An endeavor will be made in this paper to make a scientific study of this coal problem, applying all of the available data to the case and deducing the results and solutions from these.

Alberta is in a very favorable position regarding her coal resources. These are Cretaceous in age and are widely distributed over the province. Estimates as to the value and amount of these deposits have been much exaggerated in the past, chiefly due to the fact that the Geology of the province had not been worked out in detail. Due to more recent and correct data on the case new estimates have been made by the Alberta Coal Commission of 1926. These estimates show that at present there are approximately fifty-seven and a half billion tons of coal in the province of which, thirty-one and a half billion are bituminous coals: eleven and a half billion are sub-bituminous coals: and fourteen and a half billion are lignitic coals. Assuming as is pointed out by the commission that 50% of the coal is lost due to losses in mining we have the fact that Alberta has some 29 billion tons of coal that can be actually placed on the market. This supply is sufficient to ensure no shortage for considerable time to come.

The kinds of coal found in the province are many and varied. It has been found that, due to the pressure caused by the upthrust of the Rocky Mountains the seams in the youngest age along this upthrust are much superior to those further East. In the westerly part of the province we find coals having, low moisture content, low volatile content, and a high percentage of fixed carbon. Upon going further East we find that the moisture content increases greatly (as we progress) as does, the volatile matter. Due to the consequent decrease in fixed carbon in the coal and also to the fact that the moisture is high, the B.T.U. value of these coals is much less than those closer to the upthrust. Analysis of Alberta coals has been undertaken by the Scientific and Industrial Research Council of Alberta. Fig. 1 shows some of the results that have been obtained by this work, and bears out the statements made above. After several hundred Alberta coals had been analyzed by the Council it has been concluded that there are coals in Alberta ranging in quality from a good grade of anthracite to a low grade lignite. Likewise it has been shown that these do not occur in fixed classes but that in the series they are everywhere gradational. It is partly due to this great variation in the Alberta coals that there is a coal problem in the province.

Alberta, like many other new countries, has been through the stage of speculation in connection with the coal industry. This point is very well brought out in the report of the Alberta Coal Commission of 1926-it says, (page)

"Up to the end of 1924 according to records, over one thousand "mines" had been opened in the province, of which two-thirds had been abandoned. For the year 1923- the last normal year-of the twelve

Note:

Figs. 1-a, 1-b and 1-c were taken from Report No. 15 of
The Scientific and Industrial Research Council of Alberta.

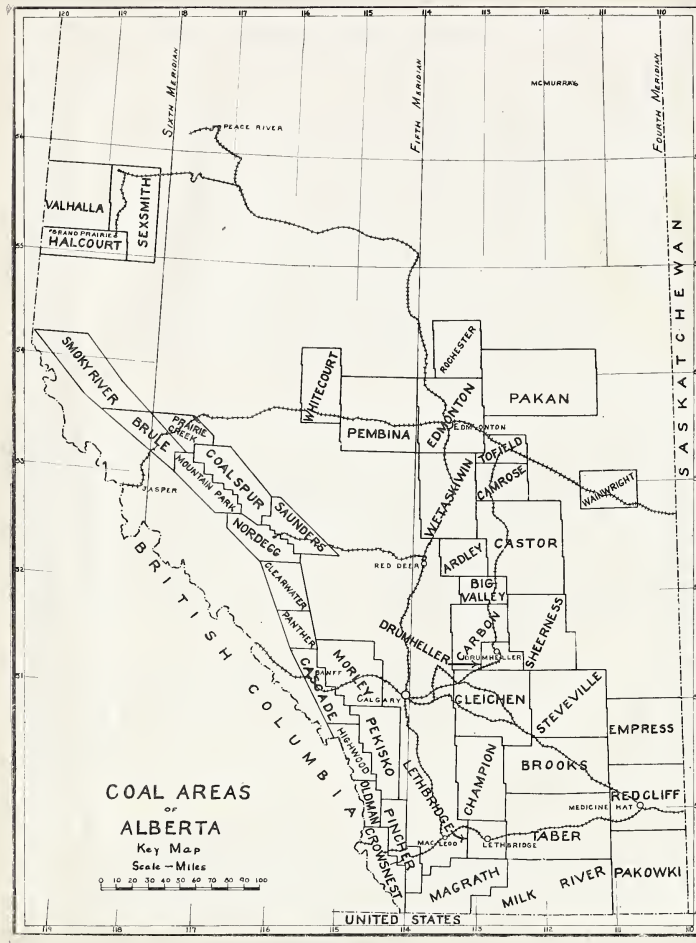


Fig. 1 - a

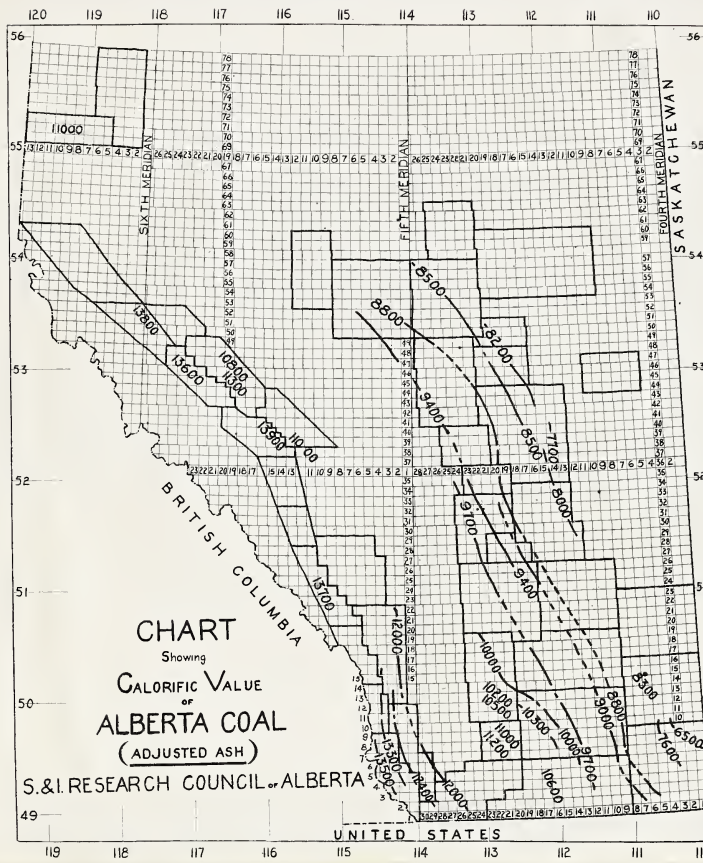


Fig 1-b

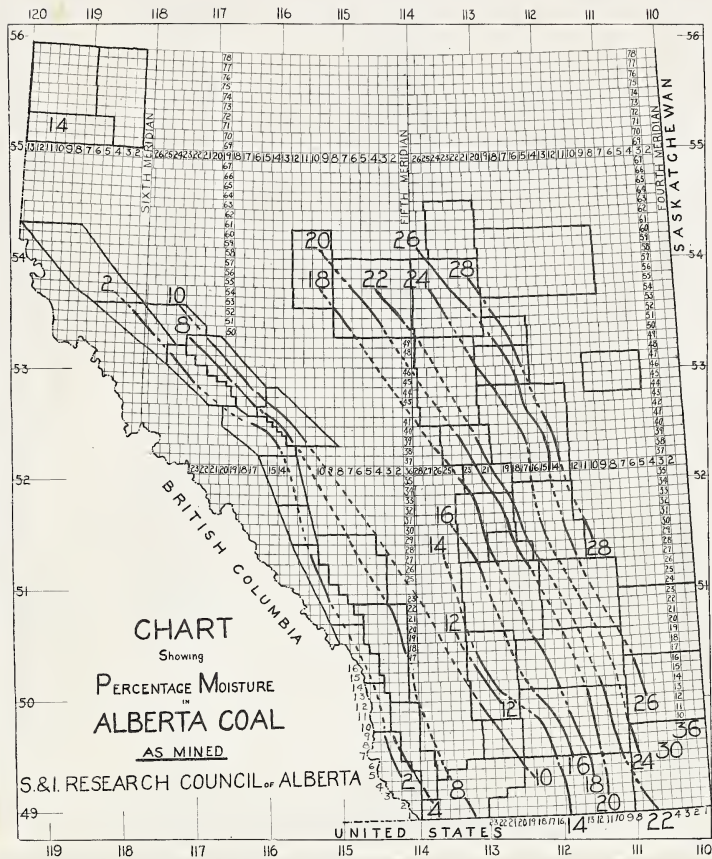


Fig 1-c

bituminous mines, nine produced over two hundred thousand tons each and were responsible for about ninety per cent of the output. Of the twenty-eight sub-bituminous mines, two produced over one hundred thousand tons each and together, five-eighths of the total. Of the 321 lignite mines, 27 with over fifty thousand tons each, produced nearly eighty per cent of the total output. Including the 21 lignite mines producing from two to fifty thousand tons a year, 48 lignite mines, produced nine-tenths of the total. For all kinds of coal 69 mines or less than one-fifth of the number, produced over ninety-five per cent of the output; and thus constituted the real coal industry of the province."

From the above statements we see very clearly that the Alberta coal situation is in a deplorable state and should be remedied at once. The total possible output of all Alberta mines is in the neighborhood of fifty thousand tons a day or an annual tonnage of about ten million tons a year. This is far above the average tonnage output of the mines in operation throughout the province today. This shows clearly that Alberta in common with United States and Great Britain is suffering from "over-development."

The inevitable situation has arisen from such an over-developed industry. Competition ^{caused by} ~~has arisen to~~ the state of confusion: competition which under normal conditions would produce an industry of health and vigor has done the very reverse and has depressed it until frantic mine owners look about for a solution. The reasons for such a calamity is not readily seen, but upon closer observation it is seen that the coal industry does not operate under "normal conditions." There is one great disadvantage that coal mining must contend with, that is not common to many industries--

the fact that coal occurs in such large quantities and at such accessible places as to make relatively small capital needed to open a "mine". This abnormality is one of the chief causes for downfall of competition in the industry. *Why?*

There is however another cause for excessive competition in the coal industry, this lies in the fact that the industry is subjected to excessive overhead costs. These costs carry on whether the mine works or not and will be discussed as briefly as possible. Besides having to pay interest on the money invested in the business, the salaries of the officials and other fixed costs common to the average business, the coal industry has the following in the way of overhead. First, there is the question of drainage, this must always be cared for by pumps and is the reason why the power must always be available. This is no small item in the overhead. Second, the timbering question, Timbering must always be kept in the best of shape due to the fact that danger is great where poor timbering is in use, also governmental regulations state that the timbering must be kept in condition. Third, the ventilation must be kept up whether the mine works or not. These three are the chief causes for the large overhead in the mining industry. *which almost pays off the overhead, and interest etc.*

The inevitable, results from such a situation. The operators, realizing the disastrous results caused by the cessation of work under such a heavy overhead, would sooner operate the mine at a profitless basis than sustain a daily loss of hundreds of dollars. In the case of that Galt Mine at Lethbridge the overhead was in the vicinity of \$250-\$300 per day. Such a loss is certainly to be avoided if possible and little blame can be placed on the

operator who tries to avoid it.

Competition within the industry is not all that the mine owners must strive against. During the last few years there has been an increasing tendency for other fuels to take the place of coal. These substitutes have caused the coal consumption of the world to cease its upward trend. A brief outline will be given of the chief competitors to the Alberta coal, and their importance will be discussed.

First-competition from ^{now} coal. This is by far the greatest competitor that that Alberta operators have to face. In this class there are the coals produced in Canada as well as that shipped in from the United States. On the East we have competition from the Sauris coals of Saskatchewan and the bituminous coals from United States. The importation of bituminous coal to Canada from the United States is between 12,500,000 and 13,000,000 tons a year. In this market we are competing with a strong and established trade. The American coals coming from, let us say, West Virginia are of bituminous nature. ^{very little strip come in w.v.} They are mined by means of stripping methods at a very low cost, and the shipping is done partly by water so that they can be laid down at Winnipeg for \$6.79.

Alberta coals are in a very different position. The possibility of mining by stripping methods is limited to the lower grades of coal and the coal must be transported over an all rail route.

The suggestion that Alberta send coal to replace the coal now used in the "Acute Fuel Area" needs some consideration. Many freight rates have been suggested that are supposed to solve the problem. Supposing that a freight rate of \$7.00 were established

by which the Alberta coals could go to Ontario.

"Total Extra Cost and Effect.

Summing up the total cost of replacement, the net result is an annual cost to the public of \$56,000,000.

There would also be an annual loss in customs revenue amounting to \$7,000,000."

This means that with a freight rate of \$7.00 there would be a loss to Canada of \$63,000,990 which would have to be borne by the Canadian public. The figures given above assume that there would be a saving of \$1,300,000 by replacing American coal in parts of Quebec, would be made.

When we consider that the total amount of capital invested in the Alberta coal mines in 1925 was only \$53,117,573, there seems no reason to the idea of subsidizing the industry to this extent.

From the above figures and facts it would seem that under the present conditions there is no justification for a seven dollar freight rate to Ontario.

Second-competition from hydro-electric and fuel oil. These two have developed during the last few years and have caused some concern in the coal markets. Of this situation, Walter Barnum, President of the National Coal Association says,

"The adoption of oil-burning apparatus and the installation of large water-power units during the last ten years have attracted much attention, partly because they have been comparatively new factors in our industrial development. For these reasons it has been easy to acquire an exaggerated idea of the extent to

in which such competition will ultimately modify the dependence of the industry on bituminous coal. As a matter of fact, there is a not far distant limit to the possible increases in the supply of petroleum and of hydro-generated electricity. Without taking too literally the estimate of the Federal Oil Conservation Board that the known resources of petroleum would be exhausted in six years under current conditions of production, there is sound reason for believing that but little increase in our annual output of oil can be expected. This fact, together with the constantly expanding demand for the lighter products of petroleum, means a diminishing supply and a higher cost of fuel oil. In fact, the return movement from oil to coal as industrial fuel is all ready well under way." In the same article we read, "I also believe that the time has come when the growth in demand for power can no longer be met through the increased use of petroleum or hydro-generated electricity but must be reflected in the rate of increase in the consumption of bituminous coal."

Third--the competition within the province from ^{where} natural gas has caused the operators who were depending on the city markets to take their output. In the Edmonton district the coal sales have been much decreased due to the fact that gas is now being piped from Viking and is being used to a large extent. Calgary is in nearly the same state and has now at her disposal practically unlimited amounts of natural gas from the Turner Valley.

Thus we see that Alberta has ample competitors in the fuel field to warrant much concern to the industry. The success of the industry will partially rest with these competitors, but not to the extent that is often credited to them.

There have been many solutions brought forward for the solution of the Alberta coal situation during the last few years. Some of these have been of merit and deserving of more attention than was paid to them. The majority of these suggestions have been put forward without any idea as to their practicability. Such schemes have attracted much public notice and much discussion has been carried on in the press; little, or no notice being given the fact that they are economically unsound. Some of these suggestions may be of some importance at some future date but at the present time are of no practical value. These will be discussed carefully and their advantages and disadvantages pointed out.

(1) Markets.

The discussion of markets has been the most talked about by the public and the press. Also this is the subject about which they know least. Statements are constantly being made that, Alberta has merely to increase her coal market and then the coal situation will be solved. This is one of the reasons why the correct solution has never been presented, for, the people investigating the situation were looking in the wrong direction. Before discussing the problem of markets it will be necessary to outline briefly the extent of the present markets and the possibilities. These are,

a-The railway market- this the largest market for Alberta coal, Of this market the Alberta Coal Commission of 1926 says; "Alberta coal is now reaching a wider territory on both railways than ever before; the full benefits of which is yet to be felt by the operators and workmen of the mines concerned". The main improvement that could be made in the system of sale of coal would

be in greater systematization of the deliveries.

b--The home market--this market is not of primary importance today but there is every hope that in the next few years it will become much larger. It has been ^{hoped} estimated that Alberta will double its population during the next ten years and that with this increase there will be an increase of at least 75% in the coal consumption in the province. Now there may also be an decrease in the amount of gas available in the province and this would call for a greater consumption of coal.

c-- The Saskatchewan market--this market is very similiar to that of Alberta and will no doubt grow parallel to that of Alberta.

d--The Manitoba market--of this the Coal Commission of 1926 says: "Manitoba is pre-eminently the market that should be captured in its entirety, for Alberta coal, save only for such competition, as lower mining and transportation costs may enable the Saskatchewan lignites to offer, in that part of the market which such coals are used. Yet, while sub-bituminous shipments are increasing, lignite coal is not holding its own; and the bituminous shipments have fallen off very badly. To enable Alberta to double its shipments to Manitoba, which it should easily do, one of the first requirements will be proper protection against the dumping of American coal and coke. Another prime essential is the co-operation among the Alberta producers, to do away with marketing anomalies and dealers' difficulties and to offer a united front to the well-organized American coal trade. Many thought that a determined effort by Alberta mines would soon persuade the American operators to acknowledge defeat and thus discontinue

dumping and oute-rate tactics. The case seems strong for the general reduction in freight rates to Manitoba and a special summer rate should be of assistance. The entire market in Manitoba belongs to the coals of Saskatchewan and Alberta and that none should rest content, until it is secured."

e--The American market--this is the field at which most of the operators avoid. There seems to be an idea prevalent among the operators to the effect that Canadian coals cannot compete successfully in the American market. This is merely a superstition and should be eliminated. There is no reason why the Crow's Nest coals cannot compete more vigorously for the Spokane market. From 1923 to 1925 the exports to the United States dropped from 83,750 tons to 49,757 tons. This shows that either the mines were lax in their methods of business or that due to other causes they did not bid for this market. (Figures to promote this?)

f--The Vancouver-Prince Rupert market--this market is full of potentialities and should be seriously considered. In this market the Alberta coals have a distinct advantage over the B.C. coals in that they are higher in B.T.U. value and they are not smokey and dirty. There is today a very widespread feeling in Vancouver for the use of Alberta coals. A fifty cent cut in the freight rate would enable the Alberta operator to place his coal on the Vancouver market at a profit. It is interesting to note that this potential market is in the neighborhood of 500,000 tons.

g--The Acute Fuel Area market--this includes the provinces of Ontario and Quebec. This has been dealt with in the discussion of the competitors and it is sufficient to say that at most it is a potential market of some question.

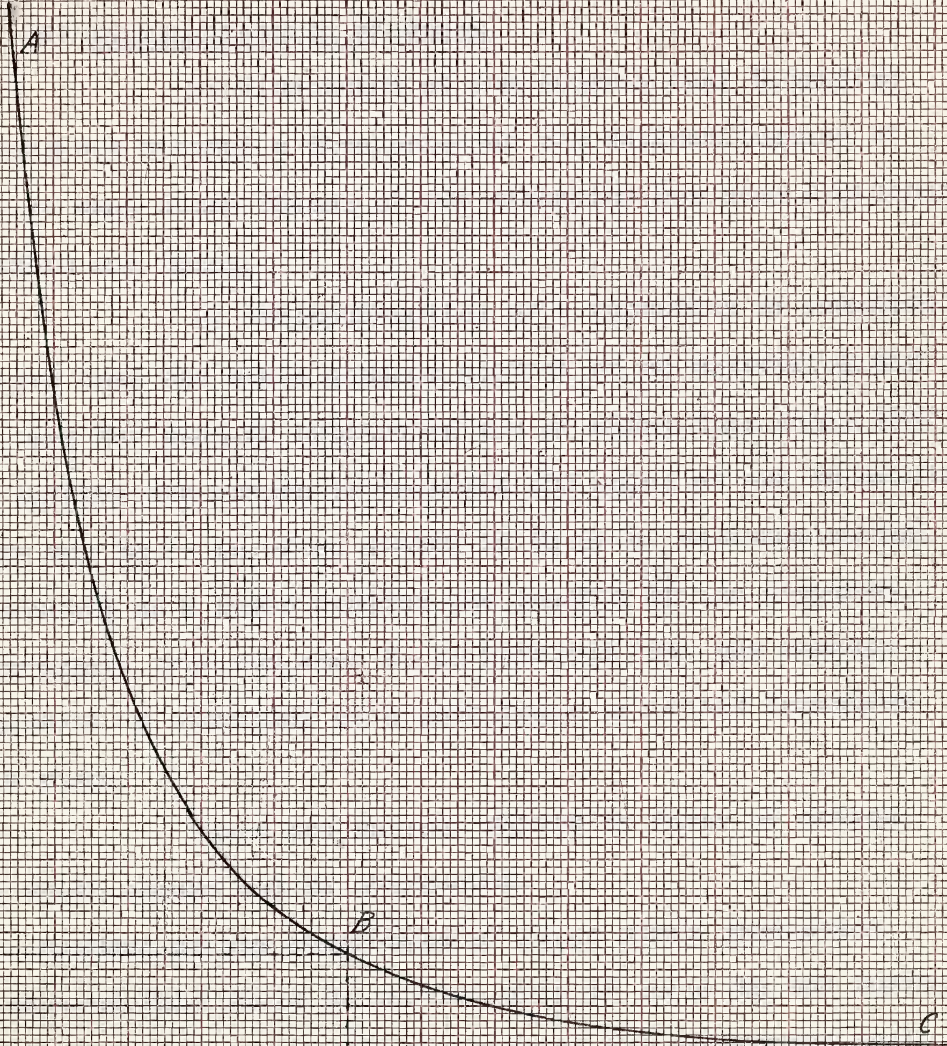
Let us now consider a hypothetical case in which the above markets greatly increase in magnitude and thus there is a greater demand for Alberta coal. The question now arises in our minds, "Will this alone solve the coal situation?" Many writers have pointed out that such would be the case and that there would be no more anxiety over the industry. These results have often been arrived at without any study of the case and should not be depended upon.

As in all lines of business, the coal industry is sensitive to the changes in the market. Thus upon an increase in market there would be an immediate effect on the industry. Mines would immediately increase their output to take up the increase until the operation was sufficient to meet this demand. Due to continuous operation, mining would become a profitable business. This would result in an immediate influx of capital to this field. Many claims and leases, previously of no ^{immediate} practical value, would ^{then} immediately be opened up. The number of mines thus increasing would cause intermittent working in the mines and the profits would drop off rapidly. A certain point would thus be reached where the profits had dropped to a point approaching the cost of operation. This can readily be seen from Fig. 2.

In the Figure the point C is called the "saturation point" with respect to the number of mines. This is the point on the curve at which the province of Alberta has for many years found itself, for no sooner does the industry pick up than an increase in mines causes a decrease in profit. From such a situation, while under the present ^{state} systems of legislation and business management, the coal industry can never emerge. Thus the idea that markets

- Fig 2 -
Curve Showing
PROFIT AGAINST NUMBER OF MINES
Point B - Saturation Point

PROFIT



NUMBER OF MINES

on what data is
this curve based?

alone, is the regulating factor in the prosperity of the coal mining industry, is a fallacy which should be eliminated from the thought of business men in this province. When sufficient changes have been made in the business management and governmental regulations, then ^{to be benefited by} is Alberta in a position for larger markets. Then, and then only, will these be of benefit to her.

(2) Nationalization of Mines.

No discussion of the Alberta Coal Situation would be complete without a discussion of the Nationalization of Mines. It, like many other phases of the situation, has been discussed by both public and press.

By nationalization of a commodity or resource it is implied that the state assumes control of an enterprise, and in return, pays for such, an arbitrated sum of money. This means that the state suffers the losses or receives the gains of the enterprise as the case may be. It is often stated in favor of nationalization, that the country as a whole derives the benefit ^{or} if the resource. This is certainly true, but, when it is realized that the average mine in Alberta is operating at a loss there is little incentive for such a step.

There are several points in favor of nationalization which should not be overlooked.

a--Many of the advantages of large scale production would be enjoyed. This would be particularly of value in the buying of machinery and supplies. Due to the size of the orders the cost would be less, also it would permit the use of specially designed equipment without excessive extra costs.

b--The marketing could be ^{or} would be controlled much

more easily since there would be one head office. Likewise there would be fewer salesmen and less overlapping of territory of markets.

c--A much more intensive advertising campaign could be carried on than would be possible under present conditions. The reason for this is obvious for today each mine must carry on advertising in its own small way, whereas, were this money pooled it could be made to do many times the amount of advertising.

d--The supervision ~~and regulation~~ and regulation of mines. This would inevitably occur since the best engineers in the province would be placed in charge of the project. There would also be a saving in overhead since many of the officials that are now duplicated could be done away with.

e--Due to this scientific management commodities required by certain of the mines would not be duplicated. Thus under nationalization there would be no call for more than one rock-dust plant in the Crow's Nest Pass. At present much capital has been sunk into these which might well be placed in other projects.

From what has been said it might appear that in nationalization lies the solution to success. There are certain inherent difficulties that the system has which would cause one to hesitate in recommending it.

a--In any project undertaken by the government there is always a certain amount of dispute regarding the policy to be followed. The decision is left in the hands of the legislature rather than in the hands of technical men, and the results are ^{always} sometimes disastrous.

b--In party politics there is a strong tendency toward favoritism, and officials in charge of national projects

frequently find themselves displaced due to changes in government. This certainly is not conducive to efficient and economical management.

c--Much trouble would occur in the arbitration over the price to be paid to the present mine owners. Also persons owning small leases in any district could demand compensation although the property may have no practical value as coal lands.

These disadvantages to the idea of nationalization more than overbalance its advantages and at present does not seem to be the correct solution. However a modification of nationalization will be discussed that has many of the advantages and few of the faults.

(3) Government Supervision of Mines.

Governmental supervision or control of mines has never been ^{attained} attained by either the Provincial or the Dominion houses. There is however a Mines Branch in Alberta which is under the Province. This branch supervises the inspection of mines having regard to safety and sanitation. The mine inspectors have jurisdiction over such matters but here their authority ends.

The result of such control is that the mine owners may not be checked up on wasting coal. Of this state of affairs the Report of the Commission of Conservation of 1913 by W.J. Dick says; "-----it can be seen that the governments of Nova Scotia, Austria, Australia and Japan and private owners of coal lands in England, Scotland, and in certain portions of the United States, supervise the methods of mining used. If it is to the advantage of these interests to engage engineers to guard against wasteful methods, surely it would be to the advantage of the Dominion Government

to do so. In Western Canada, there are usually a number of coal seams quite close together, and should the lowest seams be the most desirable with regard to quality and ease of working, there is nothing to prevent the operator from mining them first. In fact, this practice is now being followed in a number of cases in the West. As a result, caving of the measures will render it difficult, and, in many cases, impossible, to recover the coal from the upper seams. Owing to the wide distribution of coal and as leases are granted to any one desiring to mine it, the operator who looks to the future and mines the coal in a systematic manner, at an additional cost to himself, has to compete with the operator who takes the easiest available coal. There is, therefore, little encouragement to use other than wasteful methods."

There are other reasons for government control which are equally important, chief of which is the fact that under such control it would be possible to regulate the opening of mines. Such a step has long been needed and in this control lies the controlling factor in the success of the industry. This legislation has often been suggested but due to the fact that its value was never realized no action has been taken to incorporate it.

With governmental control regarding the opening of mines the policy which would of necessity be followed, would be that, unless there is a need for a new mine in a certain district, it will be a detriment to the industry, and should never be opened. This is quite a logical and sane attitude to take for with every mine that is opened in a certain district it means that the mine^s operating in the district must divide their orders. This causes needless depression and hardships in the industry.

It is due to the fact, that mines may be opened up

promiscuously, that the 1926 Coal Commission says, "Two-thirds of the mines that have been opened in Alberta have been abandoned with heavy loss; but the third still remaining has a capacity, even on the basis of seasonal operation for the sub-bituminous and lignite mines, that is at least one and a half times the present demand. This condition of over-development shows no tendency to right itself."

Let us now trace through the working of such a system and see the results on the industry. Due to this supervision let us suppose that no mines were opened where not needed. The result would be that a large dropping off would occur in the number of mines, since no openings were being made to take the place of the failures. This would in turn mean that the orders previously filled by the mines that had failed, would be distributed over the mines still operating in the district. With more orders the operators could increase their present output to normal, steadier work would result in the mines and the overhead per ton would thus decrease. A decrease in the cost of coal at the pit-mouth would occur and thus the range of shipping would increase, with a consequent increase in market.

Under such ideal conditions there would be a double benefit to the industry, for due to steady working conditions greater satisfaction would be felt by the miners. They would be insured of a good living and steady work, and the likelihood of strikes would be decreased. When, ~~the cost~~ of an idle day in the Galt Mines Lethbridge is known to cost the company 250-300 dollars the advantage of continuous working can be readily seen. Likewise when we know that the average number of days worked in the Drumheller district we can understand the large losses that ensue. This loss due to inter-

mittent working must be absorbed in the profits earned on working days. This is one of the strongest reasons for the high cost of coal at the pit-mouth and results in the narrowing of the market boundaries.

In carrying out government supervision or control benefit may be had by studying the systems of government control now in operation. For instance, a board could be made that would be similiar to the Railway Board and have similiar authority. This Board would sit on all cases regarding the opening of mines. Their judgment and decision would be based on the confidential report of their engineers as to the feasibility of the scheme. After the plans had been approved the development work would be carried on under government supervision. A license could then be issued for a limited period after which the license could be either renewed or refused. The board would also supervise the the rate setting in regard to the price that was to be charged at the mine mouth.

No system of government control should be hurried into without due consideration being given to the places where it has been tried. In the Dominion there is in addition to the Railway Commission, a Water-powers Branch of the Department of Interior which governs all such projects. [Likewise as was previously stated, supervision of mines is carried on in Nova Scotia, Austria, Australia, Japan, England and parts of United States. In these countries it has worked out admirably well and no attempt has been made to the system. *this part not clear - Would control fix prices?*

(4) Organized Marketing.

Another phase of the Alberta coal situation is that of marketing, by means of sales organizations. Such a system

would be carried out by means of "organized marketing." The benefits of "organized marketing" have been realized in many of the larger industries, where, in most cases a large measure of success has been met with. In Western Canada the best example of "organized marketing" is the Wheat Pool.

There are four types of organized marketing:

--a--Prices--in this type agreements are made between the different producers of a good regarding the price that is to be demanded. Such an arrangement minimizes competition to a large degree. This type of association has not proven very satisfactory in actual practice, as many such have failed.

--b--Output--this type of marketing is divided into two main classes:

1--The Pool System--the best example of this is the Wheat Pool.

2--The Quota System--this is exemplified by the Rhenish-Westphalian Coal Syndicate.

--c--Markets--agreements are made between producers of a good regarding allocation of markets. Thus no overlapping occurs and competition is lessened. This system has never been used very extensively.

--d--Sales--in this type, selling agencies are established through which the different producers dispose of their goods.

One of these systems is of importance in considering the coal trade, namely, organized marketing in regard to output. Both of the sub-headings will be discussed.

(1) The Pool System.

The pool system of organized marketing coal has been tried out in Saskatchewan during the last few years

"The advantages the operators expected to derive from this Pooling scheme were:-

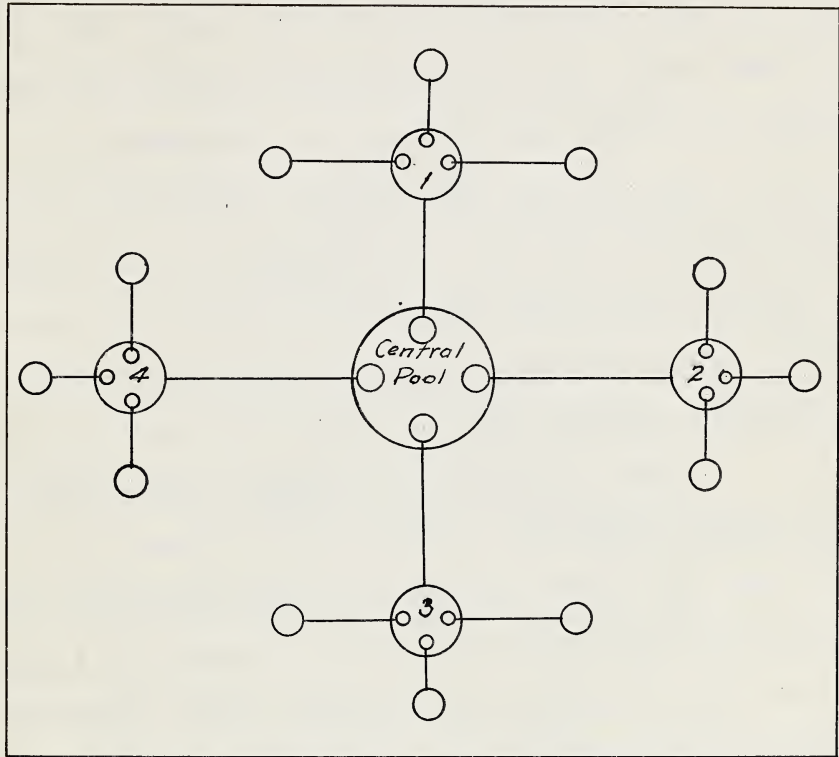
- 1--A better selling price.
- 2--An increased market.
- 3--Disposal of small sizes to better advantage.
- 4--Increased good will of the dealers by stabilizing prices and eliminating "Snow Bird" dealers.
- 5--Giving better services in the rush season.
- 6--Eliminating the payment of much double-commission paid eventually by the consumer."

The system consists of the formation of a Sales Company having no connection with any of the mines. The coal is all sold through this company on a commission basis of 18% per ton regardless of the size and grade. Advertising, selling and collecting must also be undertaken by the sales company, and payments must be made by the 10th of each month.

An allotment of tonnage is made to each mine based upon the tonnage output that the mine has had previous to the opening of the pool. When orders come in through the sales agency they are immediately forwarded to a distributing office from which they are sent daily to the mines.

To insure that a uniform product is turned out by the various mines a Screening Committee representing all of the mines has been appointed, which, # "sets the standard of preparation for the different mines". Likewise, there is an Executive Committee formed by the operators, each taking their turn for a period of three months. The object of such a committee is to deal with the correspondence and to settle special contracts that may come up.

Paper read to C.I.M.&M. --Edmonton, September 1926.



- 1- Semi-bituminous Pool
- 2- Bituminous Pool
- 3- Sub-bituminous Pool
- 4- Lignite Pool

This pool has been in operation in Saskatchewan for about three and a half years and it has been stated by the operators, that the system has lived up to the expectations of those who inaugurated it.

In Alberta a slightly different problem presents itself, in that, Alberta has coals grading all the way from anthracite to lignite. It can easily be seen that the system that is used in Saskatchewan would have to be modified to suit these conditions. In Figure 3 an arrangement is suggested that should be applicable to the Alberta situation. A central pool could be made having its members from, we will say, operators in semi-bituminous, bituminous, sub-bituminous, and lignite fields. There would also be pools of the operators mining a particular grade of coal. Thus if the above coals were recognised there would be four distinct pools, the convener of which, was a member of the central pool.

It would be the duty of the smaller pools to deal with matters pertaining only to their own market and the output of its members. The central pool on the other hand would deal with matters pertaining to the industry as a whole. It would also act as a board governing the screening and preparation of the coal. In addition the central pool would decide the class in which each mine was to be attached.

The operation in general would be quite similar to the pool in operation in Saskatchewan and the results that could be expected would be similar. Such a system should be tried in Alberta in the immediate future for only by such efforts will the situation be solved.

(2) The Quota System.

The most striking example of the quota

system of organized marketing is found in the Rhenish-Westphalian Coal Syndicate in Germany. This consists of a highly organized kartell. This ### "in its corporate capacity consisted of a limited liability company having a nominal capital in which each member held shares in proportion to his output; but its members also met as an incorporated body and entered into contractual relations with the company. "Thus we have a syndicate which is primarily a selling organization and which is the sole purchaser of the coal mined in the Ruhr.

This syndicate contracts to take a certain output from the mines, and, since it must dispose of this coal it has the right of determining this output. Next, it allotted quotas to all of the mines in proportion to their outputs on previous years. These quotas were property of the mine owners and could be sold to the owners of the more efficient mines by those in a less fortunate position. ### "In this way the Syndicate encouraged the painless extinction of uneconomic concerns and gave a limited outlet for the development of mines of rising capacity-----."

The kartell system has been in operation in the Ruhr Coal field since 1893. Previous to this date, namely, between 1873 and 1893, the output of the mines far exceeded the demand. This caused a serious price war until in 1879, seventy per cent of the mines were operating at a loss. During the following years many schemes were tried, especially in regard to price associations, but these were abandoned. The kartell system was then tried and has been in operation ever since.

"There seems to be a consensus of opinion that

Report of the Departmental Committee on Co-operative Selling in the Coal Industry---British Report--1926.

the Rhenish-Westphalian Coal Syndicate from its inception in 1893 has served the Ruhr coal industry well and has, in the main achieved its declared object, "to put an end to unhealthy competition in the coal markets." Under its regime, coal mining in the Ruhr and the coal export trade of the Ruhr have developed rapidly and fairly evenly. Inland prices have been steadied against the effects of trade booms and slumps, and more regular working of the mines has been secured. In these and other ways the development of the Ruhr coal mining industry has been regulated to its own advantage and generally speaking, to the benefit of German industry. "

From the facts presented above it may be seen that the coal industry of Germany in 1893 was in a position similar to that of Alberta today. Over development and "unhealthy competition in the coal markets" characterize both. Realizing the utter hopelessness of the situation German operators devised a system that proved eminently successful. Alberta operators have merely to apply the principles, developed so well in Germany, to their own case and receive its benefits.

It might be well to point out that the system used in Germany, for the purposes mentioned, would be an alternative that could be substituted for the system that is in operation in Saskatchewan. It should also be noted that these two systems are very distinct in detail but that they would have practically the same results on the industry as a whole.

(5) Coking-

Coking is a process by which the volatile matter in coal is driven off by heat without access to air. The resulting products are chiefly coke, coal gas, ammonium sulphate and coal tar. The coke is a hard, vitreous, carbonaceous mass having a high calorific value. Due to its hardness and strength in compression it is particularly suited for blast furnace work. It is displacing anthracite to a certain extent in this field. The gas obtained has a heat value of about 500 to 550 B.T.U. per cubic foot. This may be utilized as a fuel or wasted as in the Bee-hive oven.

Usually the by-products are collected today.

In fact many coking plants have gas as the desired product and the coke as secondary. The reason why coking is not carried out more in the West is that there is no sufficient market for the products. There should however be a market for Alberta coal in Winnipeg if the American coal could be replaced by Canadian coal.

(6) The Bergius Process.-

The Bergius Process is a method by which coal may be transformed into oil in the presence of a catalyst and hydrogen. This is carried out under high temperatures and pressures and the product which results is a heavy oil resembling our Wainwright crude. This oil may be refined and cracked, thus getting an oil suitable for use as motor fuel. The cost of production is in the neighborhood of \$5.00 to \$6.00 per barrel. This is of course much more than the cost per barrel of such oil today. Wainwright crude, for instance sells for \$2.50 to \$2.75 a barrel. Thus we see that the Bergius process is not practical at the present time. At some future date it may be of importance when the price of crude

petroleum has risen to a point at which oil can be made under the Bergius process.

A process has lately been developed out of the Bergius process that has possibilities.##" It consists in passing carbon monoxide and hydrogen properly purified, and in proportions corresponding to the formula $\text{CO} - 2\text{H} \rightarrow \text{CH}_3\text{OH}$ over ZnO at a temperature of about 400°C and a pressure of over 150 atmospheres (approx. 2000 lbs. per sq. inch) The result is an almost theoretical yield of methyl alcohol or methanol. It was reported that at the end of 1923 the Badische Company was turning out 10 to 20 tons of methanol per day. Washington reports that hears Germany will produce 15,000 metric tons during 1925, which will increase to 25,000 tons the next year. The cost of production of the synthetic alcohol is given as 26¢ per gallon. Since the price of methyl alcohol on the New York market is 67¢ per gallon, considerable consternation reigns in the U.S. Wood Distillation Industry which has supplied the American demand for methyl alcohol to date."

In this method there seems to be a better chance for Alberta to start a very profitable business in this province, especially in districts where the coal is of low grade and the mining methods are not expensive.

-Conclusions and Recommendations-

From the statements and the discussion it would appear that there is ample room for improvement in the Coal Situation in Alberta. Likewise, it would appear that, if the industry continues in its present state regarding legislation, it will not improve to a desirable extent. It is from these considerations that certain definite recommendations will be made, as briefly as possible.

First

That the Dominion and Provincial Governments co-operate in appointing a Board of Mine Commissioners whose duties would be:-

- (1) To regulate the opening of mines and thus alleviate over development.
- (2) To supervise the operation of mines in an endeavor to obtain a larger percentage of extraction.
- (3) To guard against accidents in mines and supervise the general welfare of the miners.
- (4) To act as a board of arbitration in the case of dispute, the decision of which are subject to reversal by the Supreme Court of Canada.
- (5) To supervise experimental work on new methods of mining and new processes involving coal.

-Second-

That the operators of Alberta unite in an organization whose purpose is to better the industry as a whole. This may be done in one of two ways;

- (1) By the pool system that has been used in Saskatchewan for the past three and a half years.
- (2) By the kartell system as used in the Ruhr Coal field.

-Third-

That, subsequent to carrying out the above recommendations, an endeavor be made to increase the markets by the following methods;

(1) That an advertising campaign should be carried on in Manitoba, Ontario and British Columbia as well as in parts of the United States.

(2) That an attempt be made to replace the American coal being used at Winnipeg in the coking ovens with a similar coal from Alberta. If to do this anti-dumping laws are necessary they should be immediately be passed.

(3) That the briquetting of be encouraged and that the specialists from the Scientific and Industrial Research Council be sent to plants opening in order to advise as to the kind and percentage of binder to be used.

(4) That the manufacture of methanol from coal be thoroughly investigated, and, if found feasible, its introduction encouraged.

(5) That the feasibility of central power systems be considered when hydro-electric projects are advocated.

-Bibliography-

Alberta Coal Commission's Report--1926.

Barnum, W.J., --Looking into the future of the Coal Industry.

Clark, Dr. K.A., --Introductory paper given to the Coal Tar Club
on the Bergius Process--1925.

Coal Statistics For Canada--1925

Dick, W.J., --Conservation of Coal in Canada---1913

-Bibliography Cont'd-

Miller, Andrew A.--The Pool Marketing of Coal.

Shurick, A.T.--The Coal Industry--1924.

Report of the Departmental Committee on Co-operative Selling
in the Coal Industry--British Report--1926

The Canadian Mining and Metallurgical Bulletin--March 1927.

Report No. 14--Scientific and Industrial Research Council of Alberta
